

Red Knots in South Carolina

**Felicia Sanders
Janet Thibault
Mary-Catherine Martin
Department of Natural Resources**



Red Knot Migration



- 9,300 miles spring and autumn
- One of the longest-distance migrants in the animal kingdom
- Banded knot observed for 13 years. Flown about 242,350 miles, a distance farther than from the earth to the moon.

Red Knot

Federally Threatened - 2014

- Knots - 70% decline last 20 years
- Female horseshoe crab deposits 80,000 eggs in one season
- Reduced food from increased harvests of horseshoe crabs in Delaware Bay
- Low weight knots - lower survival and breeding rates
- Horseshoe crab harvests in Delaware Bay are now managed with goals to recover knots



Delaware Bay, Horseshoe crabs. Photo © Joe Smith



Horseshoe Crab Eggs in SC!



Marsh Island



Harbor Island



Date	Location	First Capture	Recapture	Total Capture	Geolocators Recovered	Geolocators Deployed	Nanotags Deployed
7-May-2010	Bird Key	54	5	59	0	0	
23-Mar-2011	Kiawah Island	108	52	160	3	9	
18-Oct-2011	Harbor Island	137	2	139	1	25	
12-Apr-2012	Deveaux Bank	195	20	215	1	30	
1-Apr-2014	Kiawah Island	35	28	63	4	0	
21-Apr-2015	Bird Key	122	23	145	2	21	
16-Oct-2015	Marsh Island	2	0	2	0	2	
May 8-10, 2016	Deveaux Bank	50	1	51	0	35	
April 29-30, 2017	Seabrook	66	12	78	1	0	19
April 19, 2018	Seabrook	4	0	4	0	0	4
May 6, 2019	Deveaux Bank	72	3	75	0	0	73
Total		845	146	991	12	122	96

Geolocators

- Recapture to download data
- 150 to 200 kilometers (93-124 miles) accuracy



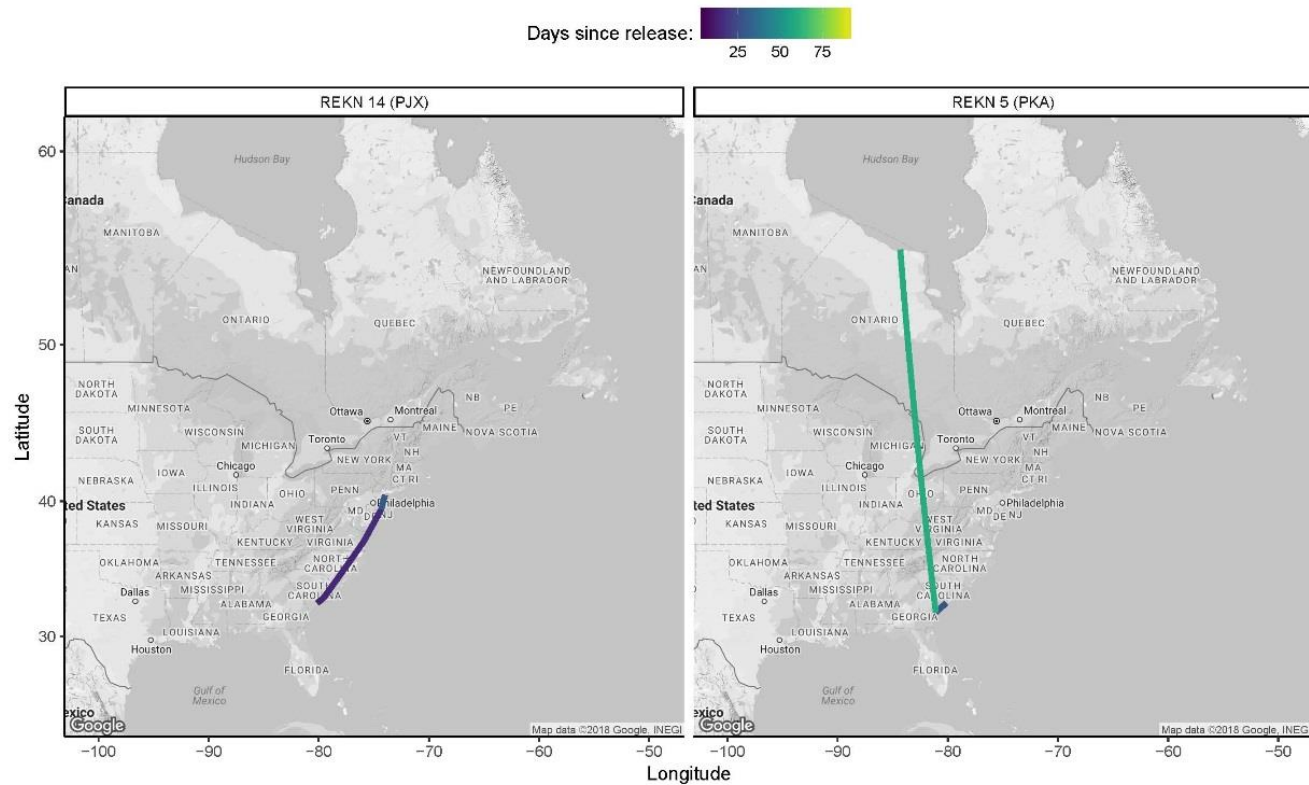
Motus Wildlife Tracking System

- Collaborative research network
- Radio telemetry track movement and behavior of small flying organisms (birds, bats, and large insects)
- Digitally-encoded radio transmitters
- Detected by automated radio telemetry stations that scan for signals 24 hours a day



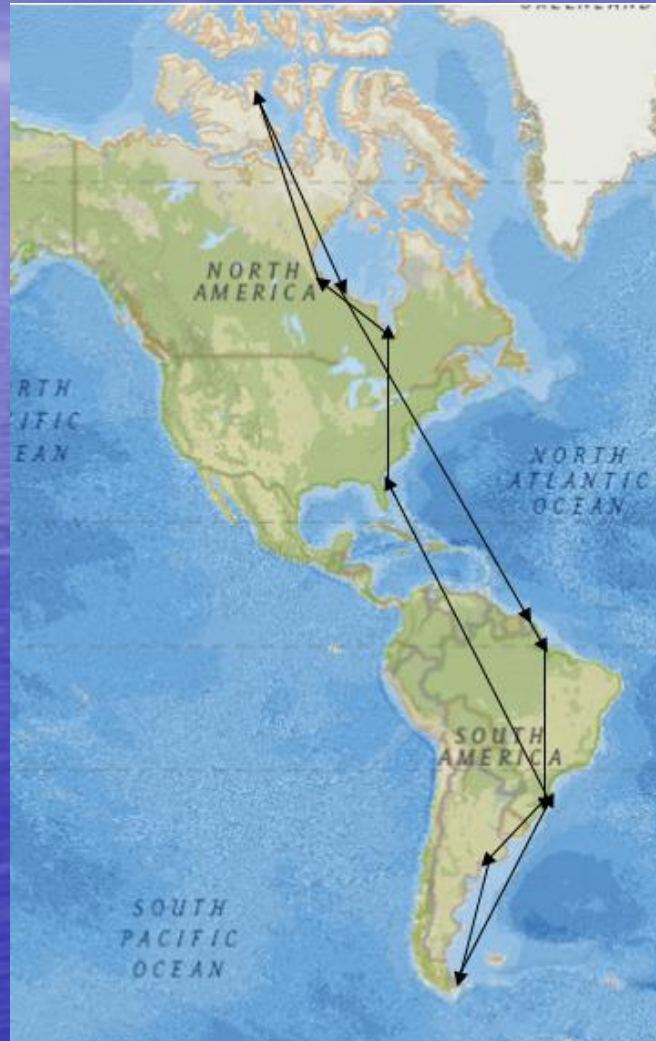
Nanotag Results

2 Routes during Spring Migration from SC



Thanks to Adam Smith for mapping
and data interpretation

Red Knot Geolocator

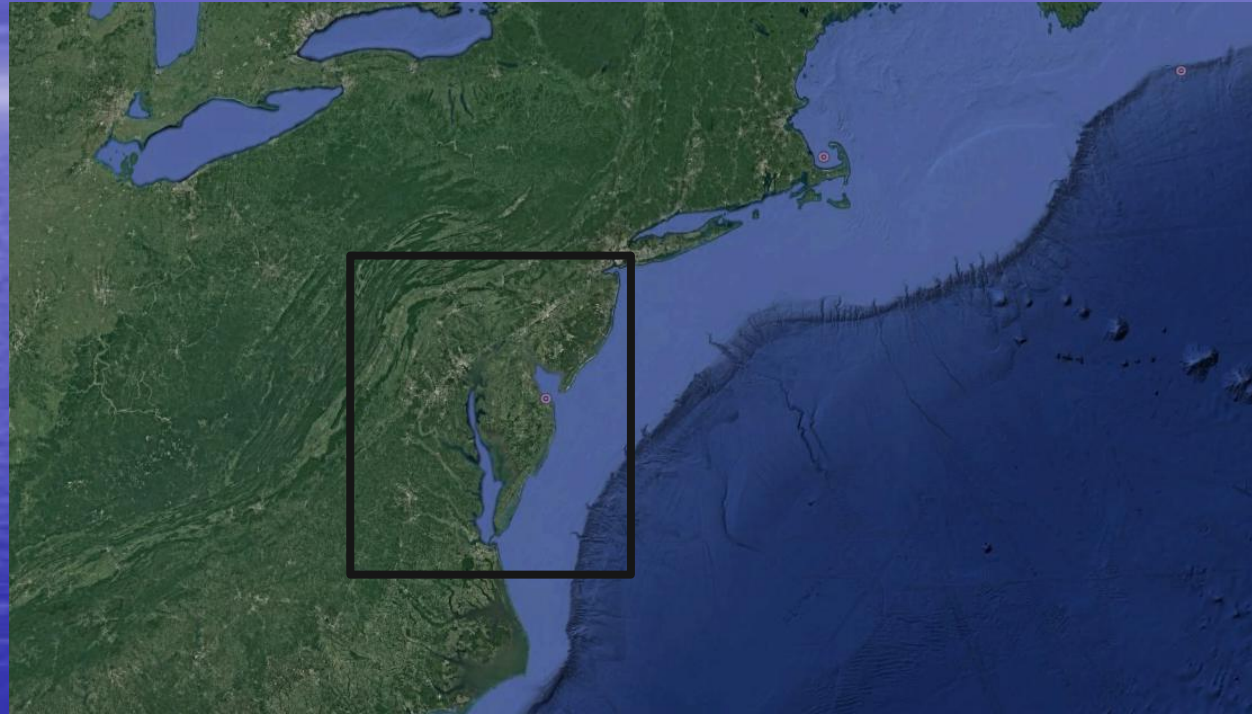


Date	Location
	Captured at Deveaux Bank, SC
23-May-16	
1-Jun-16	Arrived in James Bay
4-Jun-16	Arrived in Nelson
12-Jun-16	Left Nelson
14-Jun-16	Above Arctic Circle
21-Jun-16	Incubation starts
12-Jul-16	Left breeding area
17-Jul-16	Hudson Bay
3-Aug-16	left Hudson Bay
5-Aug-16	Arrived James Bay
6-Aug-16	Left James Bay
11-Aug-16	Arrived French Guiana
24-Aug-16	Left French Guiana
25-Aug-16	Arrived Brazil
13-Sep-16	Left Brazil
	Arrived Argentina, Bahia Blanca
19-Sep-16	
19-Oct-16	Left Bahia Blanca
20-Oct-16	Arrived Bahia Lomas, TDF
20-Mar-17	Left TDR
22-Mar-17	Arrived Brazil
27-Apr-17	left Brazil
2-May-17	arrived SC

Thanks to Ron Porter for data interpretation

Mid-Atlantic Nanotag Detection

- 23 Yes
- 49 No



- Number of dates each tag detected $N=72$, mean 7 days (1-51)
- Duration tags detected $N=72$, mean 84 days (4 - 245)

Thanks to Adam Smith for
data interpretation